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THE ELEKTRON MFG. CO.



THE PERRET SYSTEM

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From *D. R. & J. Franklin*
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OF ELECTRIC LIGHTING

FRANKLIN INSTITUTE
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SPRINGFIELD, MASS.

ЭТИЧЕСКИЙ МИНИСТЕРСТВО
АПРЕЛЬСКАЯ ПЛАНЕТА

THE
ELEKTRON MFG. CO.,

48-62 WILBRAHAM ROAD,

SPRINGFIELD, MASS.

MANUFACTURERS OF

PERRET DYNAMOS

AND

ELECTRIC ♦ ♦
LIGHTING ♦ ♦
APPARATUS.

FOR

RESIDENCES, MILLS, FACTORIES, STORES,
VESSELS, RAILROAD TRAINS, ETC.

ALSO

ELECTRIC MOTORS

FOR ALL PURPOSES.

HIGHEST AWARD PARIS EXPOSITION, 1889.



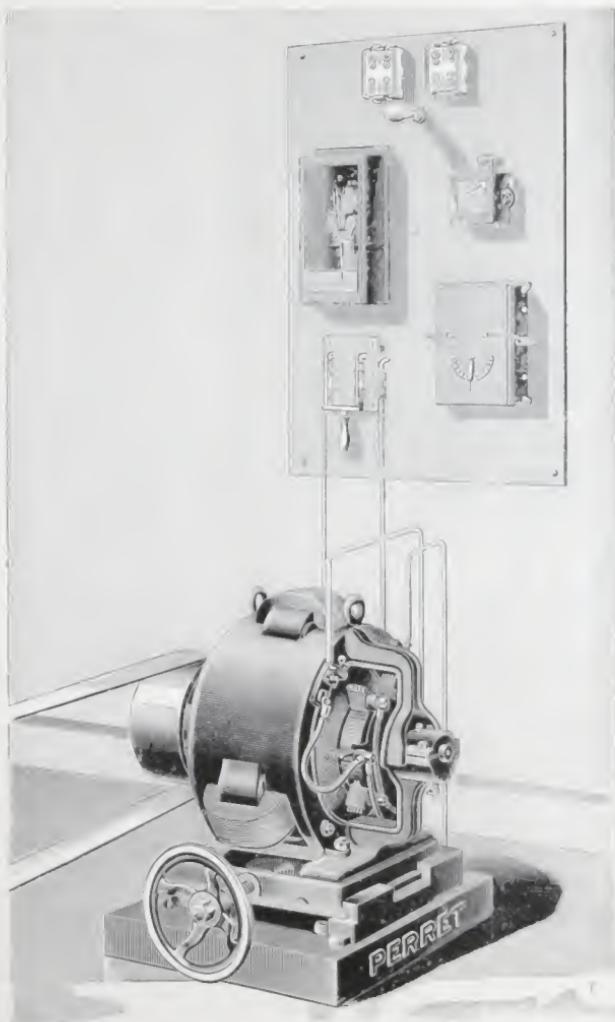
THE PERRET SYSTEM OF ELECTRIC LIGHTING.

This system is designed especially for private or isolated plants of moderate size.

The apparatus is of much higher grade than the average, is very efficient and so simple that it can be operated successfully by any person of ordinary intelligence.

By means of this apparatus a residence, store, factory or vessel wherever located, may be supplied with this "best of all" as cheaply as with inferior lights and in case surplus steam, water or other power is available, the expense will be much less.

Many manufacturers who have changed from kerosene lamps or flickering gas to the brilliant and steady electric lights have found that their employees are enabled to turn out much more and better work. The saving in this respect alone will pay for a plant in a few years.



50 Light Perret Low Speed Dynamo, With Switch Board.



DESCRIPTION OF THE PERRET DYNAMO.

THE MAGNETIC CIRCUIT—EFFICIENCY

The distinctive feature of the Perret dynamo is the construction of the field magnets. Instead of being cast or forged in the ordinary way they are built of plates of the softest charcoal iron which are stamped directly to their finished form and clamped together by bolts in such a manner as to secure great mechanical strength.

This construction gives a magnetic field of much greater intensity than can be obtained otherwise and entirely prevents all wasteful induced currents in magnets and pole pieces; points of the greatest importance and essential to high efficiency.

The armature is also built of plates and the plates have teeth which form longitudinal channels on its periphery in which the coils are wound.

It will be noticed that the plates in both field and armature are in the same plane, are of a better quality of iron than can be obtained in any other form, that the grain of the iron runs in the direction of the lines of magnetic force and that there is no air gap between the iron of the field and the teeth of the armature further than that required for clearance in rotation. In short it is a magnetic circuit of the lowest possible resistance which accounts for the high efficiency of the machines.

AUTOMATIC REGULATION

Close and automatic regulation is of no less importance in a dynamo than efficiency.

With the ordinary dynamo the position of the brushes must be changed every time the load changes (that is, when lamps are turned on or off), and the pressure must at the same time be adjusted by moving the rheostat lever.



The Perret dynamo is self regulating. It adjusts itself instantly to these changes. To prove this, all the lamps but one may be thrown suddenly on or off without materially affecting this one, and without sparking. This is a crucial test. The speed must of course be kept constant.

This perfect regulation ensures long lamp-life, reduces the attention required to the minimum, and soon saves the difference in price between a high grade and an ordinary machine.

SPEED

It is well known that most machines must be run at very high speed to secure reasonable efficiency and output without excessive bulk, weight and cost. In the opinion of many of those best competent to judge, this is their most serious defect, involving frequent trouble, and rapid deterioration. In the Perret machines this defect is entirely avoided, as a glance at the list of speeds will show. Our type D machines run at less than half the speed of other machines of equal capacity, weight and cost. In addition to the other advantages this low speed makes them peculiarly suited for direct connection to engines of various sorts, and makes a counter-shaft unnecessary in belting from ordinary lines of shafting.

MECHANICAL DETAILS

Our machines are as perfect in every detail as the highest mechanical skill can produce.

Only the best materials are used in their construction.

All parts are made to standard guages and are interchangeable.

The bearings are of best anti-friction metal, are fitted with unusual accuracy and are very long in proportion to their diameter. Hence the wear is small. Bearings are made self oiling or sight feed as desired.

The armature shafts are of special high grade steel. The armatures are strongly and positively keyed to the shaft.



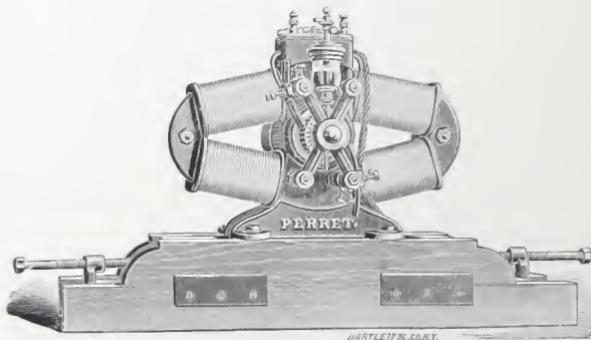
The commutators are substantially built of metal and mica and can never get out of true. The segments are drop forged copper.

The rocker is firmly clamped in place and its position never needs to be changed.

The standard machines are usually equipped with the Perret patent self adjusting carbon brushes that do not require trimming; but copper brushes will be supplied if desired.

Each dynamo of 13 lights and upwards is provided with a sliding base frame and belt tightener.

The rheostats are non-combustible, being constructed entirely of metal, slate and porcelain.



Machines of Smaller Size are of Same General Appearance and Construction.



SUMMARY OF ADVANTAGES

1. **High Efficiency.** More lights to the horse power are obtained than with other apparatus of equal size.
2. **Low Speed.** Consequently less depreciation and fewer troubles and interruptions.
3. **Close Automatic Regulation.**
4. **Extreme Simplicity.** All parts needing attention are in plain sight and easily accessible.
5. **Durability.**
6. **Steady Light.**
7. **Safety.** The current used is harmless.
8. **Both Incandescent and Arc Lamps** may be used on the same circuit.
9. **Attendance is reduced to the Minimum,** by means of self-oiling bearings and the Perret Patent self adjusting brushes which require no trimming.



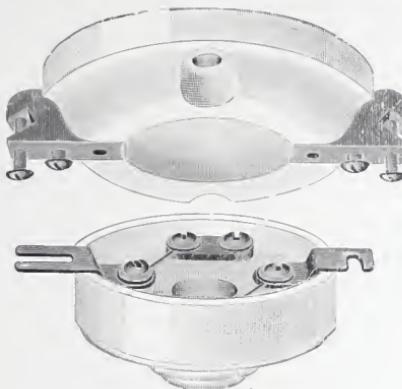
Perret Non-Combustible Rheostat.

DESCRIPTION OF AN ISOLATED PLANT
FOR
ELECTRIC LIGHTING.

1st. A Source of Power which should be reliable and regular.

In the smaller plants one horse power will supply to sixteen candle power lamps, and in the larger plants, eleven or twelve lamps. Any convenient power may be used, as water wheels, steam engines, gas engines, etc. Where a power plant is already in use, a belt from any line of shafting to pulley on dynamo is all that is required. The Perret Dynamo takes little power when doing but little work, the power required being in proportion to number of lamps burning. *In order to secure a steady light the power must be steady, as to always drive the dynamo at a uniform speed.*

2nd. A Dynamo, which should be an efficient machine, of sufficient capacity to generate current for all the lamps that will be in use at any one time, and automatic in its regulation.



Ceiling Rosette,—showing Fuses in place.

3d. A Rheostat to adjust the electrical pressure so as to produce proper brilliancy of the lamps.

4th. A Main Switch located near the Dynamo by means of which connections from dynamo to the lamp may be made or broken as desired.

5th. A Volt Meter or Pressure Indicator to show the electrical pressure on the wires. This pressure must be kept constant.

6th. An Ammeter in main circuit to indicate the amount of current flowing to the lamps.

7th. A Main Cut-out or Fuse Box. These devices afford protection against overheating of the wires, thus removing all fire risk. They are indispensable.

8th. Main Wires and Branch Wires leading to the lamps which may be located wherever light is desired. All wire must be well insulated.

9th. Fusible Cut-outs or "safety fuses" located in the circuit where each branch leaves the main wires; also where the small wires run off to each lamp or chandelier.



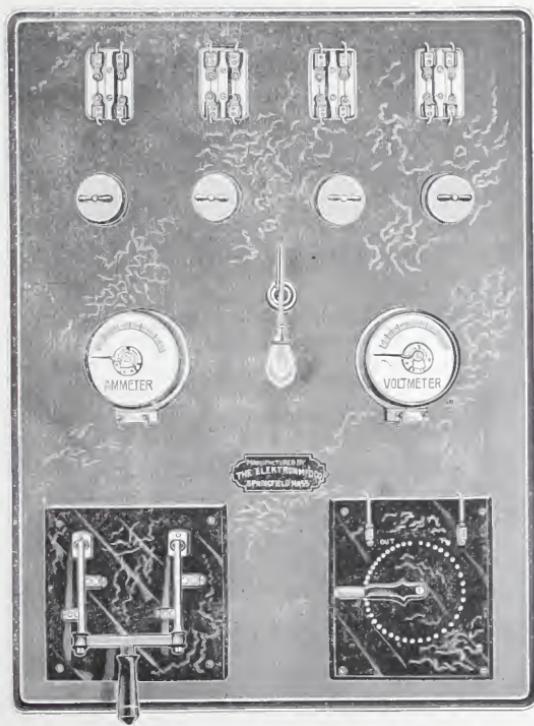
DOUBLE POLE MAIN SWITCH. (Jack Knife Style.)

10th. Lamp Sockets. These may or may not have keys for turning the lamps off or on. Rubber bushings should be screwed into the stem of each socket for the wires to pass through.

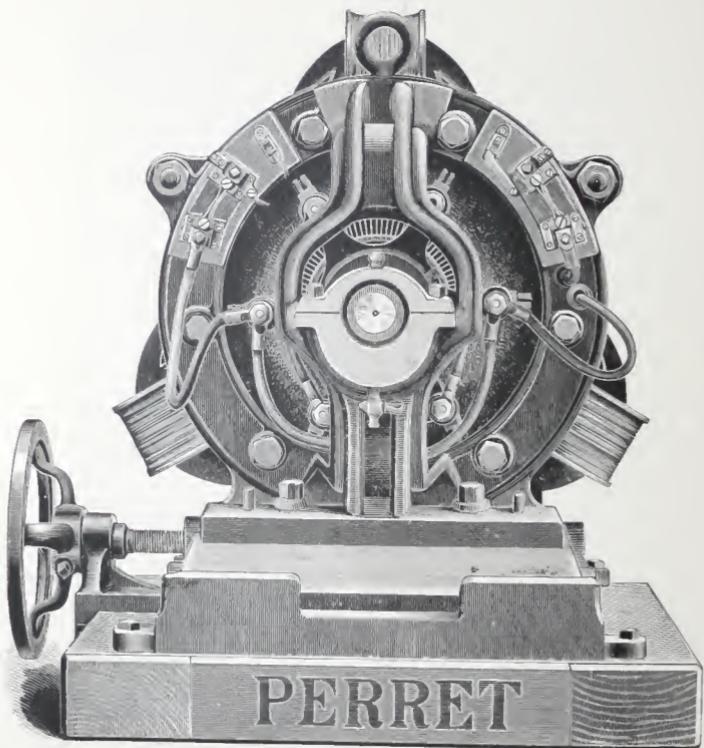
11th. Lamps. These may be easily and quickly taken out of the sockets or put into same. Lamps of any candle power may be used on the same circuits provided they are of same voltage as the dynamo.

12th. Shades and Shade Holders, which may be of any pattern desired.

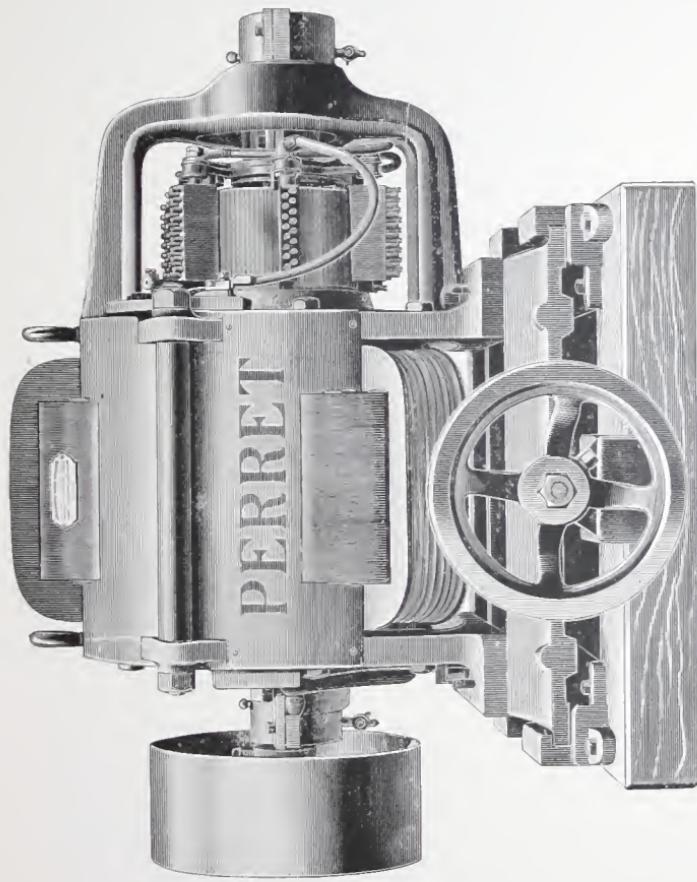
NOTE.—It is possible to dispense with Nos. 5 and 6 in very small plants, but it is not advisable to do so.



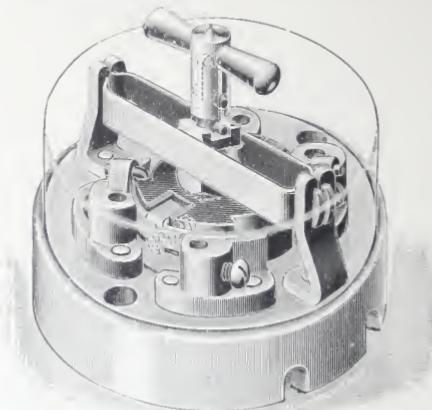
MARBLE SWITCH BOARD,
With Main Switch, Rheostat, Voltmeter, Ammeter, 4 Circuit Switches and Cut-outs.



200 LIGHT PERRET LOW-SPEED DYNAMO.
End View.



200 LIGHT PERRET LOW-SPEED DYNAMO.
Side View.



DOUBLE POLE BRANCH SWITCH.

COST OF AN ELECTRIC LIGHT PLANT.

An estimate of cost of everything complete will be furnished on receipt of following data:

Number and candle power of incandescent lamps required.
(16 C. P. are commonly used.)

Number of arc lamps.

Rough sketch of building or buildings to be lighted, with location of dynamo and lamps, and with distances stated approximately, if not accurately.

State whether the building is stone, brick or frame, and for what purpose each room in which lamps are to be placed is used. State whether it is desired to have the wires "concealed" (*i. e.*, run inside the walls), or run in mouldings or on cleats.

State whether walls are plastered or plain, and whether any of the rooms are damp or wet.



If power plant is already in, state speed of shaft from which Dynamo will be driven and how large a pulley can be placed on the shaft.

If power plant is not in we will give estimate including steam or gas engine as may be desired.

COST OF PRODUCING ELECTRIC LIGHT IN PRIVATE OR ISOLATED PLANTS.

This consists of **Power**, (which in most cases is simply cost of fuel,) **Depreciation** and **Attendance**.

Depreciation of dynamo fixtures and wiring is commonly figured at 7 per cent. per year—call it 10 per cent. Lamps are guaranteed to burn 600 hours before failing; as a matter of fact, they usually run 1000 hours or more. Their cost is trifling.

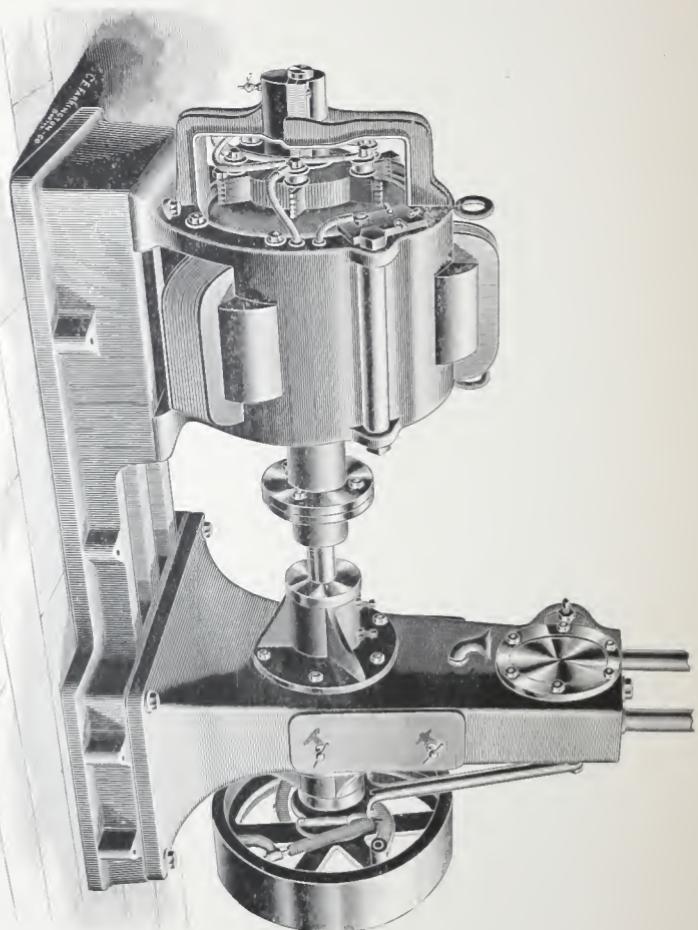
Less care is required to look after 100 incandescent electric lamps than ten kerosene lamps. The dynamo is generally placed in charge of a man who is employed on other work near at hand. It requires very little attention, being entirely automatic in its regulation.

Where water power or any surplus power is available, the item of power is practically nothing. There are thousands of mills, factories, shops, etc., where one to ten horse power could be used for electric lighting without being missed. They would thus get a much better light than is possible with gas or oil and at less cost.

If steam power is generated especially for lighting, the cost in an average plant of say 100 lights, would be as follows, based on average lighting time—1000 hours per year—with coal at \$5.00 per ton.

Ten H. P. at 6 lbs. per H. P. hour =	30 Tons at \$5.00	\$150.00
Lamp renewals		50.00
Depreciation of plant		100.00
Attendance		200.00
Total		\$500.00

This is about one-half cent per lamp hour. (Central stations usually charge one cent per lamp per hour of actual use.)



PERRET LOW-SPEED DYNAMO.

On same base and coupled direct to Steam Engine. For Ship Lighting and cases where it is necessary to Economize Space.
Details and Prices on Application.



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